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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/816,923      | 03/23/2001  | Manfred Engelhardt   | GR 98 P 2661        | 6120             |

7590 07/16/2003

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EXAMINER

WILLIAMS, ALEXANDER O

ART UNIT PAPER NUMBER

2826

DATE MAILED: 07/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                      |                     |  |
|------------------------------|----------------------|---------------------|--|
| <b>Office Action Summary</b> | Application No.      | Applicant(s)        |  |
|                              | 09/816,923           | ENGELHARDT, MANFRED |  |
|                              | Examiner             | Art Unit            |  |
|                              | Alexander O Williams | 2826                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) Responsive to communication(s) filed on 02 May 2003.

2a) This action is FINAL.                  2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) Claim(s) 1-11 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-11 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All b) Some \* c) None of:  
1. Certified copies of the priority documents have been received.  
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a)  The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

|  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s) _____   |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

Serial Number: 09/816923 Attorney's Docket #: GR98P2661P  
Filing Date: 3/23/2001; claimed foreign priority to 9/23/98

Applicant: Engelhardt

Examiner: Alexander Williams

Applicant's Amendment in Paper # 16, filed 5/2/03, has been acknowledged.

Claims 4 to 6, 10 and 11 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 4, it is unclear and confusing to what is meant by "an electrically conductive second diffusion barrier **structure** adjoining said second conductive structure at least beneath said second conductive structure." Should "the second diffusion" be with the layer or barrier?

Any of claims 4 to 6, 10 and 11 not specifically addressed above are rejected as being dependent on one or more of the claims which have been specifically objected to above.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 to 11 are rejected under 35 U.S.C. § 102(e) as being anticipated by Simpson (U.S. Patent # 6,197,688 B1).

For example, in claim 1 and similar claim 7, Simpson (figures 1 to 10) specifically figure 10 show a integrated circuit configuration, comprising: an insulating layer **96**; a first conductive structure **100** embedded in said insulating layer; a diffusion barrier layer **94** and a second insulating layer **106** disposed above said first conductive structure and being formed with a contact hole **102** reaching as far as said first conductive structure and having side walls; a second conductive structure **117** disposed in said contact hole and conductively connected to said first conductive structure; and spacers **97** formed on said side walls of said contact hole above said diffusion barrier layer, said spacers acting as a barrier to diffusion of a material from said first conductive structure into said second insulating layer and reaching as far as a surface of said diffusion barrier layer.

Claims 1 to 3 and 7 to 9 are rejected under 35 U.S.C. § 102(e) as being anticipated by Nogami et al. (U.S. Patent Application Publication # 2002/0005582 A1).

For example, in claim 1 and similar claim 7, Nogami et al. (figures 1 to 3) specifically figure 3 show a integrated circuit configuration, comprising: an insulating layer **112**; a first conductive structure **106** embedded in said insulating layer; a diffusion barrier layer **117** and a second insulating layer **124** disposed above said first conductive structure and being formed with a contact hole **119** reaching as far as said first conductive structure and having side walls; a second conductive structure **120** disposed in said contact hole and conductively connected to said first conductive structure; and spacers formed on said side walls of said contact hole above said diffusion barrier layer, said spacers acting as a barrier to diffusion of a material from said first conductive structure into said second insulating layer and reaching as far as a surface of said diffusion barrier layer.

Initially, it is noted that the 35 U.S.C. § 103 rejection based on spacers and second diffusion barrier also deals with an issue (i.e., the integration of multiple pieces into one piece or conversely, using multiple pieces in replacing a single piece) that has been previously decided by the courts.

In Howard v. Detroit Stove Works 150 U.S. 164 (1893), the Court held, "it involves no invention to cast in one piece an article which has formerly been cast in two pieces and put together...."

In In re Larson 144 USPQ 347 (CCPA 1965), the term "integral" did not define over a multi-piece structure secured as a single unit. More importantly, the court went further and stated, "we are inclined to agree with the solicitor that the use of a one-piece construction instead of the [multi-piece] structure disclosed in Tuttle et al. would be merely a matter of obvious engineering choice" (bracketed material added). The court cited In re Fridolph for support.

In re Fridolph 135 USPQ 319 (CCPA 1962) deals with submitted affidavits relating to this issue. The underlying issue in In re Fridolph was related to the end result of making a multi-piece structure into a one-piece structure. Generally, favorable patentable weight was accorded if the one-piece structure yielded results not expected from the modification of the two-piece structure into a single piece structure.

Claims 4 to 6, 10 and 11, insofar as they can be understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Nogami et al. (U.S. Patent Application Publication # 2002/0005582 A1).

Therefore, it would have been obvious to one of ordinary skill in the art to use the spacers and the second diffusion barrier layer as "merely a matter of obvious engineering choice" as set forth in the above case law.

## Response

Applicant's arguments filed 1/16/03 have been fully considered, but are moot in view of the new grounds of rejections detailed above.

The listed references are cited as of interest to this application, but not used at this time.

| Field of Search  | Date                          |
|--|-------------------------------|
| U.S. Class and subclass:<br>257/758,700,701,704,741,751,750,753,774,773,759,760,<br>762-765,767                                  | 9/16/02<br>3/25/03<br>7/10/03 |
| Other Documentation:<br>foreign patents and literature in<br>257/758,700,701,704,741,751,750,753,774,773,759,760,<br>762-765,767 | 9/16/02<br>3/25/03<br>7/10/03 |
| Electronic data base(s):<br>U.S. Patents EAST  | 9/16/02<br>3/25/03<br>7/10/03 |

***Papers related to this application may be submitted to Technology Center 2800 by facsimile transmission. Papers should be faxed to Technology Center 2800 via the Technology Center 2800 Fax center located in Crystal Plaza 4-5B15. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Technology Center 2800 Fax Center number is (703) 308-7722 or 24. Only Papers related to Technology Center 2800 APPLICATIONS SHOULD BE FAXED to the GROUP 2800 FAX CENTER.***

Any inquiry concerning this communication or any earlier communication from the examiner should be directed to **Examiner Alexander Williams** whose telephone number is **(703) 308-4863**.

Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center 2800 receptionist** whose telephone number is **(703) 308-0956**.

7/10/03



Primary Examiner  
Alexander O. Williams